

Patent Claims:

1. Method for identifying hydraulic defects in electrohydraulic brake systems for motor vehicles including an electronic regulation and control unit (16), wheel brakes (7, 8) equipped with inlet valves (17, 18) and outlet valves (27, 28), and at least one pressure source,
c h a r a c t e r i z e d by the following process steps:
 - o Identification of a defect pattern by comparing several hydraulic and electric nominal values with the actual values measured by sensors in the electronic regulation and control unit (16);
 - o Selection of a testing routine which corresponds to the defect pattern and execution thereof;
 - o Localization of the individual defect causing the defect pattern;
 - o Selection of an operating mode which takes into account the individual causing defect and operation of the brake system in this operating mode.
2. Method as claimed in claim 1,
c h a r a c t e r i z e d in that different priorities are assigned to the defect patterns, and in that a coordinated termination of the momentarily performed testing routine is arranged for when a defect pattern with a higher priority appears.

3. Method as claimed in claim 1 or 2,
c h a r a c t e r i z e d in that a coordinated termination of the momentarily performed testing routine is arranged for in the event of an interaction of the operator.
4. Method as claimed in claims 2 and 3,
c h a r a c t e r i z e d in that the coordinated termination is performed by making the brake system adopt the same condition as before the commencement of the testing routine that is to be stopped.
5. Method as claimed in any one of claims 1 to 4,
c h a r a c t e r i z e d in that the testing routine checks the hydraulic components which are associated with a defect pattern in terms of their operability, or modifies control strategies in order to find the individual causing defect.
6. Method as claimed in claim 5,
c h a r a c t e r i z e d in that the testing routines run without being noticed by the operator and maintain the maximum possible braking power, or are alternatively performed when the motor vehicle is in a condition in which the effects of the testing routines performed will not induce any dangerous driving situation.
7. Method as claimed in claim 1,
c h a r a c t e r i z e d in that after the successful localization of the individual causing

defect, additional, newly identified defect patterns are processed.

8. Method as claimed in claim 1,
c h a r a c t e r i z e d in that after an abortive localization of the individual causing defect, a limited quantity of individual defects will be taken into account by an operating mode until an appropriate testing situation is available to localize the individual causing defect.
9. Method as claimed in any one of the preceding claims,
c h a r a c t e r i z e d in that the defect pattern is represented by an actual pressure value (p_{actual}) measured by a pressure sensor (19, 30, 31, 35) and differing in at least one wheel brake (7, 8) from a preset nominal pressure value ($p_{nominal}$).
10. Method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that the defect pattern is represented by a volume input in at least one wheel brake (7, 8) which exceeds the volume input that is predetermined by the constructive design of the wheel brake (7, 8).
11. Method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that the defect pattern is represented by a rising pressure value in at least one wheel brake (7, 8) in the absence of a braking request of the driver.

12. Method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that the pressure source
is a high-pressure accumulator (21), and in that the
defect pattern is represented by a declining volume in
the high-pressure accumulator (21), with the inlet
valves (17, 18) being simultaneously closed.
13. Method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that the pressure source
is a hydraulic motor-and-pump-assembly (20), and in
that the defect pattern is represented by a deviation
of the measured performance under load from the
predetermined performance under load or by an
insufficient feed performance of the hydraulic motor-
and-pump assembly (20).
14. Method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that the pressure source
is a master brake cylinder (2) with at least one piston
(9, 10), and in that the defect pattern is represented
by a deviation of the actual pressure value determined
in the master brake cylinder compared to the nominal
pressure value that is expected on account of the
measured displacement travel of the piston (9).
15. Electrohydraulic brake system for motor vehicles
including an electronic regulation and control unit
(16), wheel brakes (7, 8) equipped with inlet valves
(17, 18) and outlet valves (27, 28), and at least one
pressure source,
c h a r a c t e r i z e d in that

- o Means are provided to identify a defect pattern by comparing several hydraulic and electric nominal values with the actual values measured by sensors in the electronic regulation and control unit (16), and that;
 - o Additional means are provided for the selection of a testing routine which corresponds to the defect pattern and execution thereof, and that;
 - o Additional means are provided for the localization of the individual defect causing the defect pattern, and that;
 - o Additional means are provided for the selection of an operating mode which takes into account the individual causing defect, and for the operation of the brake system in this operating mode.
16. Electrohydraulic brake system as claimed in claim 15, c h a r a c t e r i z e d in that additional means are provided which assign different priorities to the defect patterns and perform a coordinated termination of the momentarily performed testing routine when a defect pattern with a higher priority appears.
17. Electrohydraulic brake system as claimed in claim 15, c h a r a c t e r i z e d in that the means perform the coordinated termination by making the brake system adopt the same condition as before the commencement of the testing routine that is to be stopped.

18. Electrohydraulic brake system as claimed in any one of claims 15 to 17,
c h a r a c t e r i z e d in that the means perform active tests in the brake system or modify control strategies in order to find the individual causing defect.